



MARK A. YOUNG
EXECUTIVE DIRECTOR

LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT



SERVING LOWELL
CHELMSFORD
DRACUT
TEWKSBURY
TYNGSBORO

December 12, 2019

RE: MA0100633

To Whom It May Concern:

The following is an itemization of status and improvement for the Lowell Regional Wastewater Utility during November 2019. Enclosed is a copy of the Discharge Monitoring Report for this period.

The Discharge Monitoring Report is being submitted electronically to the Environmental Protection Agency through the NetDMR website and also via email to the Massachusetts Department of Environmental Protection.

PERMIT EXCEEDANCES:

- There were no permit exceedances for the month of November 2019.

WET WEATHER CSO DIVERSIONS/SECONDARY TREATMENT BYPASS:

- Included on pages 9 and 10 of the Plant Operating Data attachment.

FECAL COLIFORM:

- Results of additional Fecal Coliform samples required during bypassing of secondary treatment, when applicable, are included on page 8 of the Plant Operating Data attachment.

PROCESS CHANGES AND IMPROVEMENTS:

- The primary and secondary clarifiers are undergoing a complete upgrade as part of the phase 2B construction project. This has limited flow through the primary clarifiers and impacted wet weather flow capacity.
 - Secondary Clarifier No.4 was taken offline on 10/25 for a complete upgrade. This has temporarily limited flow through secondary treatment.
 - Primary Clarifiers No.1 was taken offline on 11/9 for a complete upgrade. This has temporarily limited high flow through the treatment plant.
- All aeration blowers have been replaced and are online.
- The aeration trains are undergoing modifications to Cell 1 to optimize the biological process for phosphorus control, as part of the Phase 2B construction project.

- Aeration Train No. 1 was taken offline on 11/1 and upgraded and returned to service on 11/19.
- Aeration Train No. 4 was taken offline for the upgrade on 11/19.
- Anoxic periods in the last cell of the aeration system have been disabled due to the fact that it is no longer needed for NO₃ control.
- The RAS line was chlorinated at 3lb/1000lbs MLSS from 11/5 through 11/7 to control filamentous growth and improve settling.
- Thickened Waste Pump No. 744 was replaced with a temporary progressive cavity pump on 6/14. This is being done as part of a new sludge pump technology trial.
- Beginning on 11/7 the Utility stopped accepting hauled waste leachate. City management made this decision as a precaution based on public concern over potential high PFAS levels in the waste.
- The Duck Island SCADA system is being upgraded as part of the Phase 2B construction project. This upgrade will enhance the control, automation, and data collection capabilities of the SCADA system.
 - The Utility has been in the process of transitioning to the new system, which went live on 9/27.

MAJOR EQUIPMENT MAINTENANCE:

- 11/5 – North Bank Interceptor Flow Control Gate underwent repairs and was returned to service
- 11/27 – Bisulfite Piping was repaired.

COMMERCIAL POWER OUTAGES:

- There was a brief power outage on 11/28

ODOR COMPLAINTS:

- There were no reported odor complaints during this period.

MAJOR EQUIPMENT IN SERVICE FOR THIS PERIOD:

Screw Pumps:	Nos. 1, 2, 3, and 4	Chlorine Contact Tanks:	Nos. 1 and 2
Primary Clarifiers:	Nos. 1, 2, 3, 4, 5, and 6	Gravity Thickeners:	Nos. 1 and 2
Biological Selectors:	Nos. 2, 3, and 4	Belt Filter Presses:	No. 1
Secondary Clarifiers:	Nos. 1, 2, and 4	Aeration Blowers:	Nos. 1, 2, 3 and 4
Rotary Drum Thickeners:	BDP	Temporary Centrifuge:	Online

PLANT EFFICIENCIES:

	Influent	Effluent	Average Removal
CBOD (5-Day):	211.9 mg/l	6.9 mg/l	93.4%
Suspended Solids:	166.1 mg/l	9.7 mg/l	95.3%

Respectfully,

A handwritten signature in black ink, appearing to read 'Aaron Fox', with a long horizontal stroke and a small upward flick at the end.

Aaron Fox, Operations Manager
Lowell Regional Wastewater Utility
First St. Blvd. (Rt. 110)
Lowell MA 01850

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.

OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

DISCHARGE MONITORING REPORT (DMR)

NAME: LOWELL REGIONAL WW UTILITY
ADDRESS: 451 FIRST ST BLVD
 LOWELL, MA 01850
FACILITY: LOWELL REGIONAL WW UTILITY
LOCATION: 451 FIRST ST BLVD
 LOWELL, MA 01850
ATTN: AARON FOX, OPER. SUPT

MA0100633
 PERMIT NUMBER

035-A
 DISCHARGE NUMBER

DMR MAILING ZIP CODE: 01850

MAJOR \$

(SUBR E)

TREATED EFFLUENT

External Outfall

FROM

MONITORING PERIOD		
MM/DD/YYYY	TO	MM/DD/YYYY
11/01/2019		11/30/2019

TO

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
pH	SAMPLE MEASUREMENT	*****	*****	*****	6.7	*****	7.3	SU	0	01/01	GR
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	6.0 MINIMUM	*****	8.3 MAXIMUM	SU		Daily	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	2,163	*****	lb/d	9.7	13.68	26.8	mg/L	0	05/07	24
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	8,006 MO AVG	*****	lb/d	MO AVG	45 WKLY AVG	DAILY MAX	mg/L		Weekdays	COMP24
Solids, total suspended	SAMPLE MEASUREMENT	34,219	*****	lb/d	166.1	*****	*****	mg/L	0	05/07	24
00530 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	Req. Mon. MO AVG	*****	lb/d	Req. Mon. MO AVG	*****	*****	mg/L		Weekdays	COMP24
Phosphorus, total (as P)	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	1.5	mg/L	0	01/30	24
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. DAILY MX	mg/L		Monthly	COMP24
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT	28.43	42.81	MGD	*****	*****	*****	*****	0	99/99	RC
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	32 12MO AVG	Req. Mon. DAILY MX	MGD	*****	*****	*****	*****		Continuous	RCORDR
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	0.003	*****	0.74	mg/L	0	99/99	RC
50060 0 0 Intake	PERMIT REQUIREMENT	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon. DAILY MX	mg/L		Continuous	RCORDR
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	0.02	*****	0.12	mg/L	0	01/01	GR
50060 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	0.21 MO AVG	*****	0.37 DAILY MX	mg/L		Daily	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE	
AARON FOX		978 674-4248		12/12/2019	
OPERATIONS SUPERINTENDENT		AREA CODE	NUMBER	MM/DD/YYYY	
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT			

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

REPORT MAXIMUM AND MINIMUM DAILY RATES AND TOTAL FLOW FOR EACH OPERATING DATE WITH DMR. QUARTERLY DATA ON DMR 035Q, WET DATA ON 035B. PERMIT DATA 9-1-05

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.

OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

DISCHARGE MONITORING REPORT (DMR)

NAME: LOWELL REGIONAL WW UTILITY
ADDRESS: 451 FIRST ST BLVD
 LOWELL, MA 01850
FACILITY: LOWELL REGIONAL WW UTILITY
LOCATION: 451 FIRST ST BLVD
 LOWELL, MA 01850
ATTN: AARON FOX, OPER. SUPT

MA0100633	035-A
PERMIT NUMBER	DISCHARGE NUMBER

DMR MAILING ZIP CODE: 01850

MAJOR \$

(SUBR E)

TREATED EFFLUENT

External Outfall

MONITORING PERIOD		
MM/DD/YYYY	TO	MM/DD/YYYY
11/01/2019	FROM	11/30/2019

NO DISCHARGE

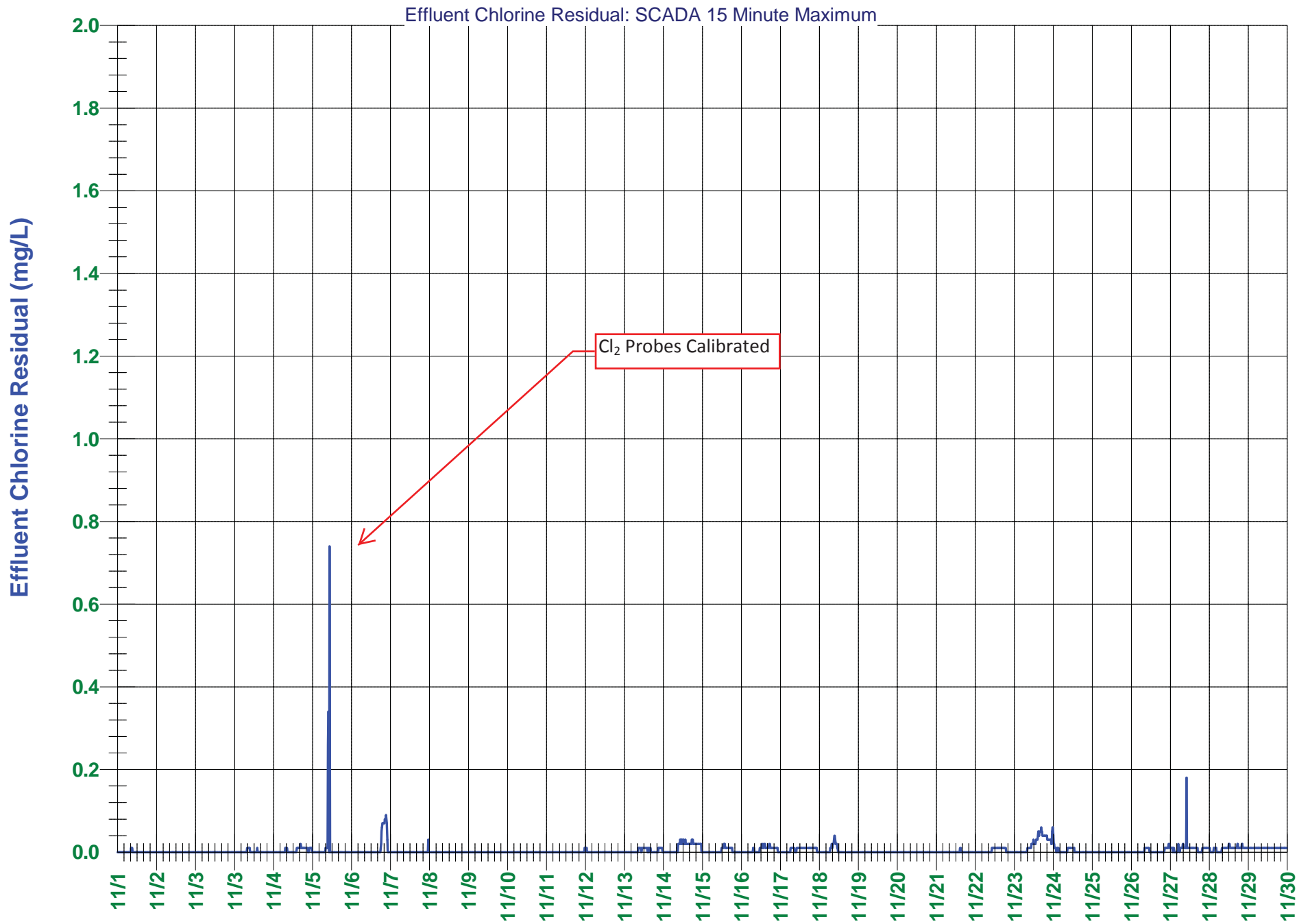
PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Coliform, fecal general	SAMPLE MEASUREMENT	*****	*****	*****	2	*****	38	#/ 100mL	0	05/07	GR
74055 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	MO GEO	*****	DAILY MX	#/ 100mL		Weekdays	GRAB
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	1,554	*****	lb/d	6.9	15.96	22.8	mg/L	0	05/07	24
80082 1 0 Effluent Gross	PERMIT REQUIREMENT	6,672 MO AVG	*****	lb/d	MO AVG	40 WKLY AVG	DAILY MX	mg/L		Weekdays	COMP24
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	43,064	*****	lb/d	211.9	*****	*****	mg/L	0	05/07	24
80082 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	Req. Mon. MO AVG	*****	lb/d	Req. Mon. MO AVG	*****	*****	mg/L		Weekdays	COMP24

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE	
AARON FOX OPERATIONS SUPERINTENDENT		978 674-4248		12/12/2019	
TYPED OR PRINTED		AREA CODE	NUMBER	MM/DD/YYYY	

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

REPORT MAXIMUM AND MINIMUM DAILY RATES AND TOTAL FLOW FOR EACH OPERATING DATE WITH DMR. QUARTERLY DATA ON DMR 035Q, WET DATA ON 035B. PERMIT DATA 9-1-05

Lowell Regional Wastewater Utility - MA0100633



Date (11/1/2019 to 11/30/2019)

/ Eff Chlorine Residual (SCADA 15 Min Max)

WIMS (Lowell Regional Wastewater Utility)

Effluent Chlorine Residual

Lowell Regional Wastewater Utility

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Plant Influent Data									
Date	Plant Influent Flow			CBOD		TSS		VSS	TVS
	Total (MG)	Max Hourly (MGD)	Min Hourly (MGD)	(mg/L)	(lbs)	(mg/L)	(lbs)	(mg/L)	(%)
01-Fri	27.01	32.20	20.87						
02-Sat	26.48	32.30	19.98						
03-Sun	26.17	31.95	18.10	118.0	25,754.4	152.00	33,175.2	146.0	96.1
04-Mon	21.14	28.55	18.45	174.0	30,677.5	148.00	26,093.5	141.0	95.3
05-Tue	23.75	39.07	17.03	360.0	71,307.0	160.00	31,692.0	151.0	94.4
06-Wed	23.38	28.05	17.24	325.0	63,371.5	158.00	30,808.3	149.0	94.3
07-Thu	31.73	67.59	0.16	300.0	79,388.5	167.00	44,192.9	156.0	93.4
08-Fri	24.29	28.83	17.86						
09-Sat	23.68	30.13	16.52						
10-Sun	23.45	29.97	16.87	166.0	32,465.1	171.00	33,443.0	162.0	94.7
11-Mon	23.22	28.10	16.13	240.0	46,477.2	174.00	33,695.9	166.0	95.4
12-Tue	22.99	27.25	16.30	250.0	47,934.2	178.00	34,129.1	170.0	95.5
13-Wed	22.77	27.46	15.93	232.0	44,057.2	151.00	28,675.2	141.0	93.4
14-Thu	21.34	26.93	15.55	238.0	42,358.2	173.00	30,789.8	165.0	95.4
15-Fri	21.47	26.11	15.66						
16-Sat	21.16	29.28	15.21						
17-Sun	21.80	29.31	14.92	168.0	30,544.4	159.00	28,908.1	151.0	95.0
18-Mon	22.44	32.18	15.43	300.0	56,144.9	223.00	41,734.4	211.0	94.6
19-Tue	27.19	60.57	16.03	188.0	42,631.7	136.00	30,840.0	126.0	92.6
20-Wed	24.10	30.52	17.84	179.0	35,977.9	135.00	27,134.2	129.0	95.6
21-Thu	22.34	27.94	16.75	310.0	57,757.8	209.00	38,940.0	195.0	93.3
22-Fri	23.26	36.97	16.64						
23-Sat	21.97	30.17	16.26						
24-Sun	42.81	71.48	17.03	95.0	33,918.4	138.00	49,270.9	123.0	89.1
25-Mon	26.13	29.99	19.71	122.0	26,586.8	207.00	45,110.3	200.0	96.6
26-Tue	24.43	29.52	18.87	148.0	30,154.4	109.00	22,208.3	89.0	81.7
27-Wed	26.79	54.14	0.69						
28-Thu	33.27	46.22	22.28						
29-Fri	23.72	30.64	18.58	152.0	30,069.4	247.00	48,862.7	235.0	95.1
30-Sat	23.49	31.78	18.50	172.0	33,695.9	126.00	24,684.2	123.0	97.6
Min	21.14	26.11	0.16	95.0	25,754	109.0	22,208	89.0	81.7
Max	42.81	71.48	22.28	360.0	79,388	247.0	49,271	235.0	97.6
Avg	24.93	35.17	16.25	211.9	43,064	166.1	34,219	156.5	94.0
Total	747.77				861,272		684,388		

Lowell Regional Wastewater Utility

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	Primary Influent Data												
Date	Primary Influent Flow			CBOD		TSS		VSS	TVS	Settleable Solids	Grit & Screenings	Ambient Temperature (F)	
	Total (MG)	Max. Hourly (MGD)	Min. Hourly (MGD)	(mg/L)	(lbs)	(mg/L)	(lbs)	(mg/L)	(%)	(ml/L)	(cu ft)	Min.	Max.
01-Fri	27.01	32.20	20.87								81	32	56
02-Sat	26.48	32.30	19.98								81	32	53
03-Sun	26.17	31.95	18.10			198.0	43,215	188.0	94.9	10.0	81	33	54
04-Mon	21.14	28.55	18.45			226.0	39,846	214.0	94.7	13.5	81	34	54
05-Tue	23.75	39.07	17.03			230.0	45,557	214.0	93.0	13.0	81	40	57
06-Wed	23.38	28.05	17.24	210.0	40,948	274.0	53,427	252.0	92.0	14.0	81	33	53
07-Thu	31.73	67.59	0.16	480.0	127,022	298.0	78,859	204.0	68.5	29.0	81	29	54
08-Fri	24.29	28.83	17.86								81	23	35
09-Sat	23.68	30.13	16.52								81	23	39
10-Sun	23.45	29.97	16.87								81	33	51
11-Mon	23.22	28.10	16.13			402.0	77,849	360.0	89.6	16.0	81	33	49
12-Tue	22.99	27.25	16.30	292.0	55,987	218.0	41,799	208.0	95.4	12.5	81	17	38
13-Wed	22.77	27.46	15.93	278.0	52,793	234.0	44,437	218.0	93.2	13.5	81	17	30
14-Thu	21.34	26.93	15.55	240.0	42,714	202.0	35,951	196.0	97.0	7.4	81	19	39
15-Fri	21.47	26.11	15.66								81	23	50
16-Sat	21.16	29.28	15.21								81	20	36
17-Sun	21.80	29.31	14.92			212.0	38,544	206.0	97.2	14.0	81	21	35
18-Mon	22.44	32.18	15.43			274.0	51,279	264.0	96.4	19.0	81	35	40
19-Tue	27.19	60.57	16.03	160.0	36,282	388.0	87,985	344.0	88.7	13.0	81	38	43
20-Wed	24.10	30.52	17.84	190.0	38,189	250.0	50,249	224.0	89.6	10.0	81	34	40
21-Thu	22.34	27.94	16.75	205.0	38,195	109.0	20,308	103.0	94.5	13.5	81	34	49
22-Fri	23.26	36.97	16.64								81	30	53
23-Sat	21.97	30.17	16.26								81	30	46
24-Sun	42.81	71.48	17.03			300.0	107,111	258.0	86.0	14.5	81	34	41
25-Mon	26.13	29.99	19.71			210.0	45,764	198.0	94.3	11.0	81	32	53
26-Tue	24.43	29.52	18.87	180.0	36,674	240.0	48,899	240.0	100.0	19.5	81	32	61
27-Wed	26.79	54.14	0.69								81	33	52
28-Thu	33.27	46.22	22.28								81	32	44
29-Fri	23.72	30.64	18.58								81	24	39
30-Sat	23.49	31.78	18.50								81	18	37
Min	21.14	26.11	0.16	160.0	36,282	109.0	20,308	103.0	68.5	7.4	81	17	30
Max	42.81	71.48	22.28	480.0	127,022	402.0	107,111	360.0	100.0	29.0	81	40	61
Avg	24.93	35.17	16.25	248.3	52,089	250.9	53,593	228.9	92.0	14.3	81	29	46
Total	747.77				468,803		911,078				2,430		

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Date	Primary Effluent Data													
	Primary Effluent Flow	CBOD			TSS			VSS	TVS	Settleable Solids	PS&G Avg Rate	PS&G Total Flow	Ammonia NH3	Nitrate NO3
	Total (MG)	(mg/L)	(lbs)	(% Removal)	(mg/L)	(lbs)	(% Removal)	(mg/L)	(%)	(ml/L)	(GPM)	(MG)	(mg/L)	(mg/L)
01-Fri											1,083	1.56		
02-Sat											1,040	1.51		
03-Sun					64.0	13,968	57.9	63.0	98.4	0.30	1,020	1.39		
04-Mon					68.0	11,989	54.1	66.0	97.1	0.30	1,049	1.53		
05-Tue					69.0	13,667	56.9	66.0	95.7	0.20	1,011	1.48	25.7	0.35
06-Wed		130.0	25,349	60.0	72.0	14,039	54.4	68.0	94.4	0.10	1,055	1.47		
07-Thu		114.0	30,168	62.0	72.0	19,053	56.9	68.0	94.4	0.30	908	1.34		
08-Fri											1,099	1.53		
09-Sat											1,106	1.60		
10-Sun											1,074	1.57		
11-Mon					69.0	13,362	60.3	66.0	95.7	0.20	1,047	1.51		
12-Tue		130.0	24,926	48.0	66.0	12,655	62.9	64.0	97.0	0.50	1,027	1.49	23.4	0.23
13-Wed		132.0	25,067	43.1	65.0	12,344	57.0	60.0	92.3	0.50	1,003	1.45		
14-Thu		106.0	18,865	55.5	57.0	10,145	67.1	57.0	100.0	0.80	999	1.44		
15-Fri											982	1.43		
16-Sat											1,006	1.42		
17-Sun					96.0	17,454	39.6	92.0	95.8	0.30	1,067	1.52		
18-Mon					74.0	13,849	66.8	71.0	95.9	0.30	1,028	1.51		
19-Tue		115.0	26,078	38.8	77.0	17,461	43.4	72.0	93.5	0.30	987	1.43	19.0	0.27
20-Wed		100.0	20,099	44.1	62.0	12,462	54.1	61.0	98.4	0.20	1,020	1.47		
21-Thu		122.0	22,731	60.6	66.0	12,297	68.4	64.0	97.0	0.05	958	1.41		
22-Fri											955	1.37		
23-Sat											928	1.35		
24-Sun					90.0	32,133	34.8	80.0	88.9	1.40	922	1.32		
25-Mon					65.0	14,165	68.6	63.0	96.9	0.05	948	1.37		
26-Tue		101.0	20,578	31.8	68.0	13,855	37.6	66.0	97.1	0.10	992	1.41		
27-Wed											974	1.42		
28-Thu											1,013	1.44		
29-Fri											1,023	1.48		
30-Sat											1,018	1.46		
Min		100.0	18,865	31.8	57.0	10,145	34.8	57.0	88.9	0.05	908	1.32	19.0	0.23
Max		132.0	30,168	62.0	96.0	32,133	68.6	92.0	100.0	1.40	1,106	1.60	25.7	0.35
Avg		116.7	23,762	49.3	70.6	14,994	55.3	67.5	95.8	0.35	1,011	1.45	22.7	0.28
Total			213,861			254,897						43.65		

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	Secondary Data							
Date	SAS					Ammonia NH3-N	Nitrogen Removal	Nitrate NO3
	RAS TSS (mg/L)	Avg TS Conc. (mg/L)	RAS Avg Flow (gpm)	WAS Avg Flow (gpm)	WAS TS (lb)	(mg/L)	(%)	(mg/L)
01-Fri			6,323	347				
02-Sat			6,195	358				
03-Sun			6,127	350				
04-Mon		8,473	5,709	347	35,277			
05-Tue			5,477	339		13.5	47.5	4.13
06-Wed			5,427	335				
07-Thu		8,253	5,633	312	30,878			
08-Fri			5,636	385				
09-Sat			5,494	389				
10-Sun			5,422	387				
11-Mon			5,370	381				
12-Tue		7,607	5,328	373	34,105	11.7	50.0	3.62
13-Wed			5,277	376				
14-Thu		8,020	5,250	370	35,600			
15-Fri			5,136	391				
16-Sat			5,179	406				
17-Sun			5,222	405				
18-Mon		7,220	5,358	405	35,108			
19-Tue			5,890	393		12.3	35.3	2.25
20-Wed			5,857	388				
21-Thu		7,467	5,464	399	35,773			
22-Fri			5,580	408				
23-Sat			5,440	406				
24-Sun			7,548	399				
25-Mon		5,587	6,141	428	28,727			
26-Tue			5,988	438				
27-Wed			6,240	413				
28-Thu			6,997	407				
29-Fri			5,796	415				
30-Sat			5,863	432				
Min		5,587	5,136	312	28,727	11.7	35.3	2.25
Max		8,473	7,548	438	35,773	13.5	50.0	4.13
Avg		7,518	5,745	386	33,638	12.5	44.2	3.33
Total					235,467			

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Solids Handling Data														
Date	Polymer		Hauled Waste Total gal	Septage Received (gal)	TWAS		GT Average Flow (GPM)	Sludge Feed (%TS)	Total Dewatering Feed Flow (gal)	Hauled Sludge Cake				
	(gal)	(lbs)			Average Flow (GPM)	(%TS)				(wet lbs)	(wet tons)	(wet metric tons)	(dry tons)	(%TS)
01-Fri	148	1,234	116,000	52,840	33.3	4.9	1,101	3.8	227,044	0	91.04	82.58	23.26	25.6
02-Sat	148	1,234	36,051	22,500	32.4	5.2	1,069		17,586	0	0.00	0.00		
03-Sun	148	1,234	0	0			1,032	4.5	110,484	0	0.00	0.00	0.00	23.9
04-Mon	148	1,234	93,410	44,500	31.3	5.2	1,103	4.3	159,540	0	128.68	116.73	32.47	25.2
05-Tue	148	1,234	104,914	41,940	30.6	5.2	1,052	4.4	229,838	0	99.79	90.52	25.36	25.4
06-Wed	148	1,234	121,859	54,200	28.1	5.6	1,051	4.2	242,395	0	98.61	89.45	24.31	24.7
07-Thu	148	1,234	78,000	38,100	26.1	5.6	954	3.9	151,401	0	102.56	93.03	26.15	25.5
08-Fri	148	1,234	34,047	45,340	34.5	5.3	1,078	3.3	168,970	0	98.44	89.29	24.30	24.7
09-Sat	148	1,234	8,986	5,000			1,123		1,565	0	0.00	0.00		
10-Sun	148	1,234	0	0			1,100	4.5	118,714	0	0.00	0.00	0.00	25.3
11-Mon	148	1,234	18,130	85,600	30.1	6.0	1,067	4.5	129,741	0	164.48	149.20	42.23	25.7
12-Tue	148	1,234	18,000	45,540	38.1	4.6	1,046	4.1	165,965	0	63.25	57.37	16.14	25.5
13-Wed	148	1,234	53,000	45,378	31.6	5.6	1,022	4.3	141,116	0	98.67	89.50	24.39	24.7
14-Thu	148	1,234	35,000	38,500	31.0	5.6	1,010	3.7	169,817	0	100.00	90.71	24.63	24.6
15-Fri	148	1,234	60,803	42,254	33.1	5.6	998	3.6	169,935	0	99.57	90.32	24.47	24.6
16-Sat	148	1,234	9,000	49,500			990		1,404	0	0.00	0.00		
17-Sun	148	1,234	0	0			1,070	4.3	100,762	0	0.00	0.00	0.00	24.8
18-Mon	148	1,234	17,000	58,500	46.4	4.1	1,053	4.2	157,255	323,840	161.92	146.88	38.75	23.9
19-Tue	148	1,234	26,000	53,338	33.6	5.5	989	4.6	167,815	0	100.96	91.58	26.77	26.5
20-Wed	148	1,234	35,000	47,040	38.4	4.8	1,024	4.8	154,701	0	102.75	93.20	25.64	25.0
21-Thu	148	1,234	26,784	34,700	39.5	4.8	980	3.7	205,067	0	99.11	89.90	23.97	24.2
22-Fri	148	1,234	34,868	34,240	36.5	5.3	949	3.6	203,319	0	102.68	93.14	25.17	24.5
23-Sat	148	1,234	0	39,700			936		1,576	0	0.00	0.00		
24-Sun	148	1,234	0	10,000			910	4.3	153,988	0	0.00	0.00	0.00	25.0
25-Mon	148	1,234	18,000	41,500	36.6	5.5	954	4.1	144,324	0	166.89	151.39	43.06	25.8
26-Tue	148	1,234	35,000	51,400	61.4	3.4	986	3.2	207,495	0	104.03	94.37	25.96	25.0
27-Wed	148	1,234	18,000	62,054	37.7	5.2	988		55,494	0	104.52	94.81		
28-Thu	148	1,234	0	0			1,005	3.1	70,045	0	0.00	0.00	0.00	24.3
29-Fri	148	1,234	27,000	37,840			1,034	4.0	153,332	0	61.37	55.67	15.17	24.7
30-Sat	148	1,234	0	26,875			1,021	4.4	71,575	0	68.32	61.97	16.97	24.8
Min	148	1,234	0	0	26.15	3.35	910	3.1	1,404	0	0.00	0.00	0.00	23.9
Max	148	1,234	121,859	85,600	61.44	5.95	1,123	4.8	242,395	323,840	166.89	202.08	43.06	26.5
Avg	148	1,234	34,162	36,946	35.52	5.13	1,023	4.1	135,076	10,795	73.92	6.74	21.17	25.0
Total	4,440	37,030	1,024,852	1,108,379					4,052,265	323,840	2,217.64	202.08	529.17	

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	Plant Effluent Data (1)											
Date	Plant Effluent Flow			Settleable Solids (ml/L)	Effluent Temp (F)	D.O. Grab (mg/L)	Cl2 Dose (lbs)	Chlorine Residual (mg/L) (Grab Samples)			Chlorine Residual Continuous Recording	
	Total (MG)	Max. Hourly (MGD)	Min. Hourly (MGD)					Shift 1	Shift 2	Shift 3	Avg. (mg/L)	Max. (mg/L)
01-Fri	26.27	30.00	20.23		64.8	8.2	1,390		0.05		0.00	0.01
02-Sat	25.34	30.17	20.11		62.6	8.5	1,390		0.01		0.00	0.00
03-Sun	24.55	29.28	16.30	0.05	62.2	8.4	1,010		0.00		0.00	0.00
04-Mon	23.43	27.24	16.30	0.05	61.9	8.4	1,200		0.01		0.00	0.01
05-Tue	23.10	36.59	15.92	0.05	62.8	8.5	1,200		0.01		0.00	0.02
06-Wed	22.76	26.73	15.63	0.05	62.2	8.3	1,264		0.00		0.01	0.74
07-Thu	30.18	66.51	0.01	0.05	62.6	8.2	1,516		0.00		0.01	0.09
08-Fri	24.02	29.10	16.87		61.9	8.4	1,011		0.12		0.00	0.03
09-Sat	22.76	28.21	14.54		59.7	8.3	1,264		0.00		0.00	0.00
10-Sun	23.05	28.41	15.74		59.5	8.2	1,137		0.02		0.00	0.00
11-Mon	23.05	27.64	15.04	0.05	59.7	8.2	1,137		0.00		0.00	0.00
12-Tue	22.46	25.90	15.00	0.05	60.8	8.1	1,137		0.01		0.00	0.01
13-Wed	20.87	24.88	13.86	0.05	57.9	8.7	1,011		0.00		0.00	0.01
14-Thu	21.14	25.54	13.13	0.05	58.6	8.7	1,137		0.00		0.00	0.01
15-Fri	21.47	24.86	14.19		58.3	8.5	1,011		0.05		0.01	0.03
16-Sat	21.16	26.58	13.63		58.3	9.1	1,137		0.07		0.00	0.02
17-Sun	21.80	28.19	13.22	0.05	58.6	8.5	947		0.01		0.01	0.02
18-Mon	22.44	30.66	14.29	0.05	59.4	8.3	1,075		0.01		0.01	0.01
19-Tue	27.19	59.63	14.10	0.05	56.7	8.9	1,011		0.00		0.00	0.04
20-Wed	24.10	28.66	17.69	0.05	58.1	8.1	885		0.00		0.00	0.00
21-Thu	22.34	26.38	15.51	0.05	59.9	8.3	948		0.00		0.00	0.00
22-Fri	23.26	33.80	15.18		58.5	8.7	1,011		0.02		0.00	0.01
23-Sat	21.97	27.48	14.60		57.2	9.0	1,137		0.04		0.00	0.01
24-Sun	42.81	71.98	15.42	0.05	57.7	8.8	1,516		0.01		0.02	0.06
25-Mon	26.13	31.19	19.00	0.05	58.3	8.5	758		0.00		0.00	0.04
26-Tue	24.43	28.52	17.32	0.05	59.2	8.6	948		0.04		0.00	0.00
27-Wed	26.79	54.45	0.07		58.8	8.4	948		0.01		0.00	0.02
28-Thu	33.27	46.15	22.25		58.6	8.5	1,011		0.11		0.01	0.18
29-Fri	23.72	29.12	17.30		58.6	8.6	948		0.11		0.01	0.02
30-Sat	23.49	29.20	16.27		54.0	9.4	1,011		0.00		0.01	0.01
Min	20.87	24.86	0.01	0.05	54.0	8.1	758		0.00		0.00	0.00
Max	42.81	71.98	22.25	0.05	64.8	9.4	1,516		0.12		0.02	0.74
Avg	24.65	33.77	14.96	0.05	59.6	8.5	1,104		0.02		0.003	0.05
Total	739.36	12 MM Avg=	28.43				33,106					

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Plant Effluent Data (2)

Date	Plant Effluent pH			Fecal Coliform (colonies/100 ml)	Fecal Coliform Bypass Event (colonies/100 ml)	CBOD			TSS			VSS	TVS	Ammonia NH3-N	Nitrogen Removal	Total Phosphorus	Phosphorus Removal
	Min.	Max.	Grab			(mg/L)	(lbs)	(% Removal)	(mg/L)	(lbs)	(% Removal)	(mg/L)	(%)	(mg/L)	(%)	(mg/L)	(%)
01-Fri	6.4	6.5	6.8	5													
02-Sat	6.5	6.7	7.0														
03-Sun	6.4	6.6	7.0			3.7	758	97.1	8.9	1,823	94.5	8.7	97.8				
04-Mon	6.5	6.7	6.9	2		4.2	821	97.3	7.7	1,505	94.2	7.7	100.0				
05-Tue	6.4	6.7	7.1	1		5.8	1,117	98.4	10.6	2,042	93.6	10.0	94.3				82.3
06-Wed	6.5	6.7	7.1	0		4.4	835	98.7	7.2	1,366	95.6	6.9	95.8				
07-Thu	6.3	6.8	7.1	0		22.8	5,739	92.8	22.0	5,537	87.5	20.6	93.6				
08-Fri	6.4	6.6	6.7	2													
09-Sat	6.4	6.6	6.9														
10-Sun	6.4	6.6	6.9			5.0	961	97.0	5.6	1,077	96.8	5.6	100.0				
11-Mon	6.5	6.7	7.1			6.0	1,153	97.5	8.3	1,596	95.3	8.3	100.0				
12-Tue	6.5	6.7	7.0	0		6.4	1,199	97.5	7.2	1,348	96.0	7.2	100.0				85.1
13-Wed	6.5	6.7	7.0	1		7.6	1,323	97.0	15.8	2,750	90.4	14.8	93.7				
14-Thu	6.4	6.6	7.0	1		5.2	917	97.8	6.8	1,199	96.1	6.8	100.0				
15-Fri	6.4	6.7	6.9	2													
16-Sat	6.5	6.7	7.1	2													
17-Sun	6.5	6.6	7.1			4.9	891	97.1	8.0	1,455	95.0	8.0	100.0				
18-Mon	6.5	6.6	7.1	3		5.1	954	98.3	7.7	1,441	96.5	7.7	100.0			1.5	
19-Tue	6.3	6.7	7.0	2	72	10.8	2,449	94.3	10.4	2,359	92.4	10.1	97.1				78.5
20-Wed	6.4	6.6	7.1	7		4.6	925	97.4	6.7	1,347	95.0	6.6	98.5				
21-Thu	6.5	6.6	7.1	2		4.6	857	98.5	5.8	1,081	97.2	5.8	100.0				
22-Fri	6.5	6.6	7.0	0													
23-Sat	6.5	6.6	7.1														
24-Sun	6.3	6.7	7.1			16.2	5,783	82.9	26.8	9,567	80.6	23.2	86.6				
25-Mon	6.2	6.6	7.0	3		5.2	1,133	95.7	7.1	1,547	96.6	7.1	100.0				
26-Tue	6.5	6.6	7.1	38		4.6	937	96.9	7.0	1,426	93.6	6.9	98.6				
27-Wed	6.1	6.8	7.2	2													
28-Thu	0.0	14.0	7.0														
29-Fri	6.6	6.7	7.0			6.6	1,306	95.7	7.6	1,503	96.9	7.6	100.0				
30-Sat	6.5	6.6	7.3	2		5.2	1,019	97.0	6.6	1,293	94.8	6.6	100.0				
Min	0.0	6.5	6.7	0	72	3.7	758	82.9	5.6	1,077	80.6	5.6	86.6			1.5	78.5
Max	6.6	14.0	7.3	38	72	22.8	5,783	98.7	26.8	9,567	97.2	23.2	100.0			1.5	85.1
Avg				4	72	6.9	1,554	96.2	9.7	2,163	93.9	9.3	97.8			1.5	82.0
Total		MO GEO=			2		31,077	93.4		43,262	95.3						

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Date	Duck Island WWTF Rain (in)	Secondary Bypass			Barasford Station Div.			Beaver Brook Station Div.			Merrimack Station Div.			Tilden Station Diverson		
		Duration	Volume	Number	Duration	Volume	Number	Duration	Volume	Number	Duration	Volume	Number	Duration	Volume	Number
		Mins.	MG	Events	Mins.	MG	Events	Mins.	MG	Events	Mins.	MG	Events	Mins.	MG	Events
01-Fri	0.09															
02-Sat																
03-Sun																
04-Mon																
05-Tue	0.02															
06-Wed																
07-Thu	0.37	493	5.67	1												
08-Fri		0	0.14													
09-Sat																
10-Sun																
11-Mon																
12-Tue	0.04															
13-Wed																
14-Thu																
15-Fri																
16-Sat																
17-Sun																
18-Mon	0.10	0	0.16													
19-Tue	0.20	203	2.45	1												
20-Wed	0.10															
21-Thu																
22-Fri	0.09															
23-Sat																
24-Sun	0.68	654	9.89	1	29	0.05	1				38	1.01	1			
25-Mon																
26-Tue																
27-Wed	0.18	195	1.86	1												
28-Thu	0.17	318	2.98	1												
29-Fri																
30-Sat																
Min	0.02				29						38					
Max	0.68	654	9.89		29	0.05					38	1.01				
Avg	0.19															
Total	2.04	1,863	23.15	5	29	0.05	1				38	1.01	1			

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Date	Walker Station Diversion			Warren Station Diversion			West Station Diversion			Read Station Diversion			All Diversions		
	Duration	Volume	Number	Duration	Volume	Number	Duration	Volume	Number	Duration	Volume	Number	Duration	Volume	Number
	Mins.	MG	Events	Mins.	MG	Events	Mins.	MG	Events	Mins.	MG	Events	Mins.	MG	Events
01-Fri															
02-Sat															
03-Sun															
04-Mon															
05-Tue															
06-Wed															
07-Thu															
08-Fri															
09-Sat															
10-Sun															
11-Mon															
12-Tue															
13-Wed															
14-Thu															
15-Fri															
16-Sat															
17-Sun															
18-Mon															
19-Tue															
20-Wed															
21-Thu															
22-Fri															
23-Sat															
24-Sun							0	2.50					67	3.56	1
25-Mon															
26-Tue															
27-Wed															
28-Thu															
29-Fri															
30-Sat															
Min													67		
Max								2.50					67	3.56	
Avg															
Total								2.50					67	3.56	1